

ERIOGONUM CEDRORUM (POLYGONACEAE: ERIOGONOIDEAE),
A NEW SPECIES FROM NORTHWESTERN CALIFORNIA

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ABSTRACT

Eriogonum cedrorum of the subg. *Oligogonum* is proposed and illustrated for a localized endemic confined to The Cedars area of Sonoma Co., California. The new species, allied to *E. nervulosum*, differs from that species in having bright yellow flowers that are on shorter stipes but associated with longer involucre.

RESUMEN

Se propone y se ilustra **Eriogonum cedrorum** del subg. *Oligogonum* para un endemismo confinado al área de The Cedars del condado de Sonoma, California. La nueva especie, emparentada con *E. nervulosum*, difiere de esta última por tener flores amarillo brillante que están en estipes más cortas pero asociadas con involucros más largos.

The Cedars wild buckwheat, *Eriogonum cedrorum*, has been known to botanists since first collected by Freedom W. Hoffman (1880–1959) in 1947. In the mid 1980s Raiche made additional collections, which Reveal mistakenly assigned to *E. nervulosum* (S. Stokes) Reveal, leading to confusion in the description of that species (e.g., Reveal 2005). An opportunity to study the two species in the field in late July of 2009 showed that the two were not the same and The Cedars plant is now described formally.

Eriogonum cedrorum Reveal & Raiche, sp. nov. (**Figs. 1–2**). TYPE: UNITED STATES. CALIFORNIA: Sonoma Co.: The Cedars, Central Canyon area NE of Layton Mine and S of the “upper mine” on steep, gravelly, serpentine, N-facing slopes at 410 m elev., 38°37'16"N, 123°07'37"W, T9N, R12W, sec. 13SENE, 28 Jul 2009, J.L. Reveal & R. Raiche 8989 (HOLOTYPE: NY; ISOTYPES: BH, BM, BRY, CAS, GH, LL, MO, OSC, RM, RSA, TEX, UC, US, UTC).

A Eriogono nervuloso floribus flavis (nec albis), involucre longioribus (4–6.5 mm nec 3–4 mm) et stipitibus brevioribus (0.1–0.3 mm nec 0.5–0.8 mm) differt.

Plants low spreading synoecious herbaceous perennials, 1–4(–10) dm long, 1–3(–5) dm across, composed of loosely arranged rosettes of tufted leaves at tips of slender, woody caudex branches arising from a stout woody taproot. **Leaves** tightly arranged in small, more or less well defined basal rosettes; petiole 0.3–0.8(–1.1) cm long, densely tannish-white tomentose, arising from a narrowly elongate triangular petiole base, 2–3.5 mm long, 1.5–2 mm wide, tomentose and minutely villous abaxially, glabrous and tannish adaxially; blade broadly elliptic to ovate, 0.7–1.5 cm long, 0.4–1 cm wide, tannish-white lanate abaxially, thinly tomentose to glabrate or glabrous and greenish to light olive-green adaxially especially with age, with a broadly obtuse to rounded base not tapering to the petiole, an entire, plane margin, and a mostly obtuse to broadly obtuse apex; midvein slightly raised, obscured by tomentum. **Aerial flowering stems** erect to slightly spreading, 2–8 cm long, villous, bractless. **Inflorescences** compound umbellate, slightly open, mostly 1–2 cm long, 1–3 cm across; branches villous, grayish to greenish white, not drying blackish; bracts 4–6 at base of inflorescence, spreading, sessile or nearly so with elliptic blades, 4–10 mm long, (1.5–)2–4 mm wide, usually white tomentose abaxially, thinly tomentose and slightly greenish adaxially; centrally positioned peduncle 5–10 mm long, villous; lateral branches 3–8 mm long, these terminated by a whorl of 4–6 linear to narrowly oblanceolate bracts, 2–8 mm long, 0.7–1.2 mm wide; peduncles atop lateral branches 2–5(–7)

mm long, villous. **Involucres** solitary, broadly turbinate, 4–6.5 mm long, 3.5–5.5(–6) mm wide, densely villous abaxially, glabrous adaxially; teeth 6–8, erect, acute (when long) to obtuse or even rounded apically, 0.3–0.6(–1) mm long **Pedicels** erect to slightly curved with age, 4–6.5 mm long, glabrous; bractlets linear, 4–6(–6.5) mm long, densely villous. **Flowers** bright yellow at early anthesis, rapidly becoming fused with red and ultimately red to reddish maroon with an undertone of yellow, 2–3 mm long when yellow becoming 4.5–6 mm at maturity on a 0.1–0.3 mm long stipe, glabrous; tepals monomorphic, obovate; stamens slightly exerted, with 2–4 mm long, slightly pilose basally filaments, and oval, yellow, 0.4–0.6 mm long anthers; pistil with styles 1–1.3(–1.5) mm long. **Achenes** light yellowish brown, narrowly trigonous, 4.5–6 mm long, glabrous; embryo straight.

Distribution.—Known only from serpentine talus slopes and rock crevices at The Cedars, 1200–1800 ft elev, Sonoma Co., California (Fig. 3). Jun–Sep.

Additional collections examined: **U.S.A. CALIFORNIA. Sonoma Co.:** Layton Mine, Austin Creek, 29 Sep 1947, *Hoffman 507* (CAS, RSA, UC, UTC); on King Ridge Road near Red Slide, E of Austin Creek, The Cedars, 550 m elev., 23 Jun 1984, *Raiche 43234* (CAS); near Layton Mine N of Cazadero, The Cedars, 370 m elev., 10 Aug 1985, *Raiche 50716* (CAS).

Eriogonum cedrorum (from the Latin *cedrorus*, of cedars) is a member of subg. *Oligogonum* Nutt., a taxon typified by *E. umbellatum* Torr., that presently is composed of some 35 species of subshrubs and herbaceous perennials that occur from Alaska to central Mexico, and from Virginia and West Virginia to the Pacific Coast. The new species belongs to a subgroup characterized by an involucre with erect teeth and smallish leaves arranged into rosettes that result in low, spreading mats. Therefore, within the subfamily The Cedars wild buckwheat may be quickly distinguished by a whorl of bracts immediately below the inflorescence, glabrous flowers on short stipes that are initially yellow but rapidly change to a red or reddish-maroon, a synoecious habit, villous involucres, and leaf-blades that are lanate abaxially. Based on the yellow flower color, *E. cedrorum* is allied to *E. ternatum*, but that species differs in its compact mat of densely arranged rosettes of leaves terminated by long (10–30 cm long) flowering stems that bear an umbellate inflorescence with sulphur-yellow flowers that remain distinctly yellow even at maturity. *Eriogonum cedrorum* differs from the more closely allied *E. nervulosum* of nearby Colusa, Glenn, and Lake counties, California, by its yellow (not white) flowers, and while both quickly become reddish, the yellow and white undertone is retained in each species. Both of these species occur on serpentine but *E. nervulosum* tends to be more compact than *E. cedrorum*. Both species have relatively short aerial flowering stems and similar leaves, but they differ in lengths of their involucres (4–6.5 mm in *E. cedrorum* versus 3–4 mm in *E. nervulosum*) and in the length of their stipes (0.1–0.3 mm versus 0.5–0.8 mm, respectively). Also individual plants of *E. cedrorum* tend to be larger than those of *E. nervulosum*, but this may be the result of the loose talus slopes where *E. cedrorum* is found rather than any significant genetically-fixed morphological difference. Both species differ from *E. ternatum* in having compound umbellate inflorescences (Fig. 2), with that of *E. cedrorum* more open (and thus more obviously branched) than that of *E. nervulosum*, which often appears to be subumbellate.

The Cedars wild buckwheat joins a small number of other relatively restricted species found within the more or less 7000 acres that defines The Cedars. This area is an isolated block of ultramafic mantle rock (Harzburgite), and its derived soils, which is only nine air miles from the moist, fog-dominated coastal climate influenced by the Pacific Ocean; nonetheless, the area is dominated by a hot dry summer more typical of the interior California climates well to the east. Six other plant species are endemic here: *Arctostaphylos bakeri* Eastw. ssp. *sublaevis* P.V. Wells, *Calochortus raichei* Farwig & Girard, *Epipactis gigantea* Douglas ex Hook. f. *rubrifolia* P.M. Br., *Erigeron serpentinus* G.L. Nesom, *Streptanthus glandulosus* Hook. ssp. *hoffmanii* (Kruckeb.) M. Mayer & D.W. Taylor, and *S. morrisonii* F.W. Hoffm. ssp. *hirtiflorus* F.W. Hoffm. In addition we are aware of an undescribed *Holodiscus* taxon.

While The Cedars terrain is dominated by Sargent cypress woodland (*Hesperocyparis sargentii* (Jeps.) Bartel) and chaparral, the extremely steep canyon slopes are mostly open rock and talus forming extensive serpentine barrens. This open rock and talus is the only place that *Eriogonum cedrorum* grows, and only a small portion of this habitat seems suitable for this wild buckwheat. The majority of plants grow in loose gravelly

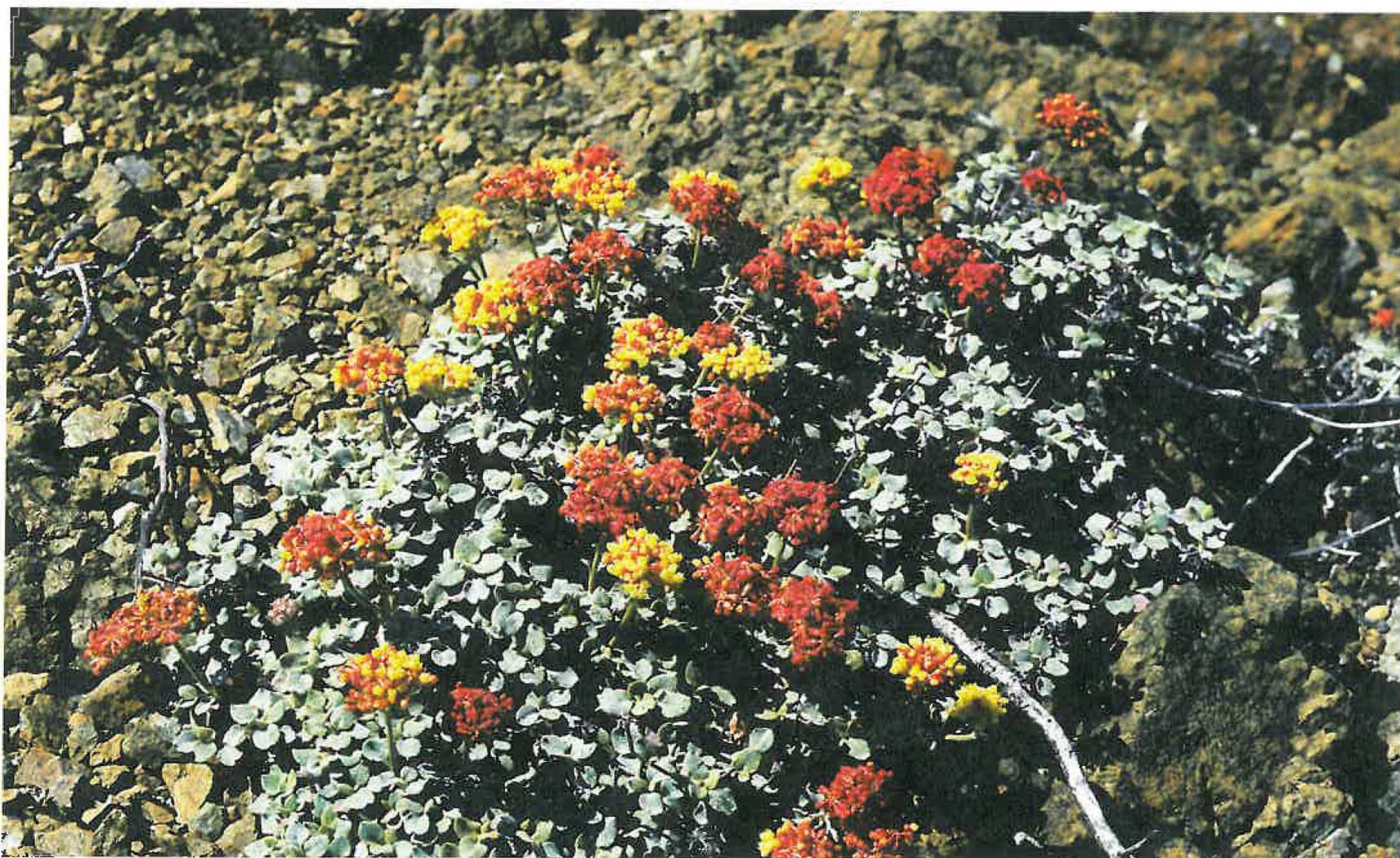


FIG. 1. *Eriogonum cedrorum*, habit.



FIG. 2. *Eriogonum cedrorum*, details of inflorescences.

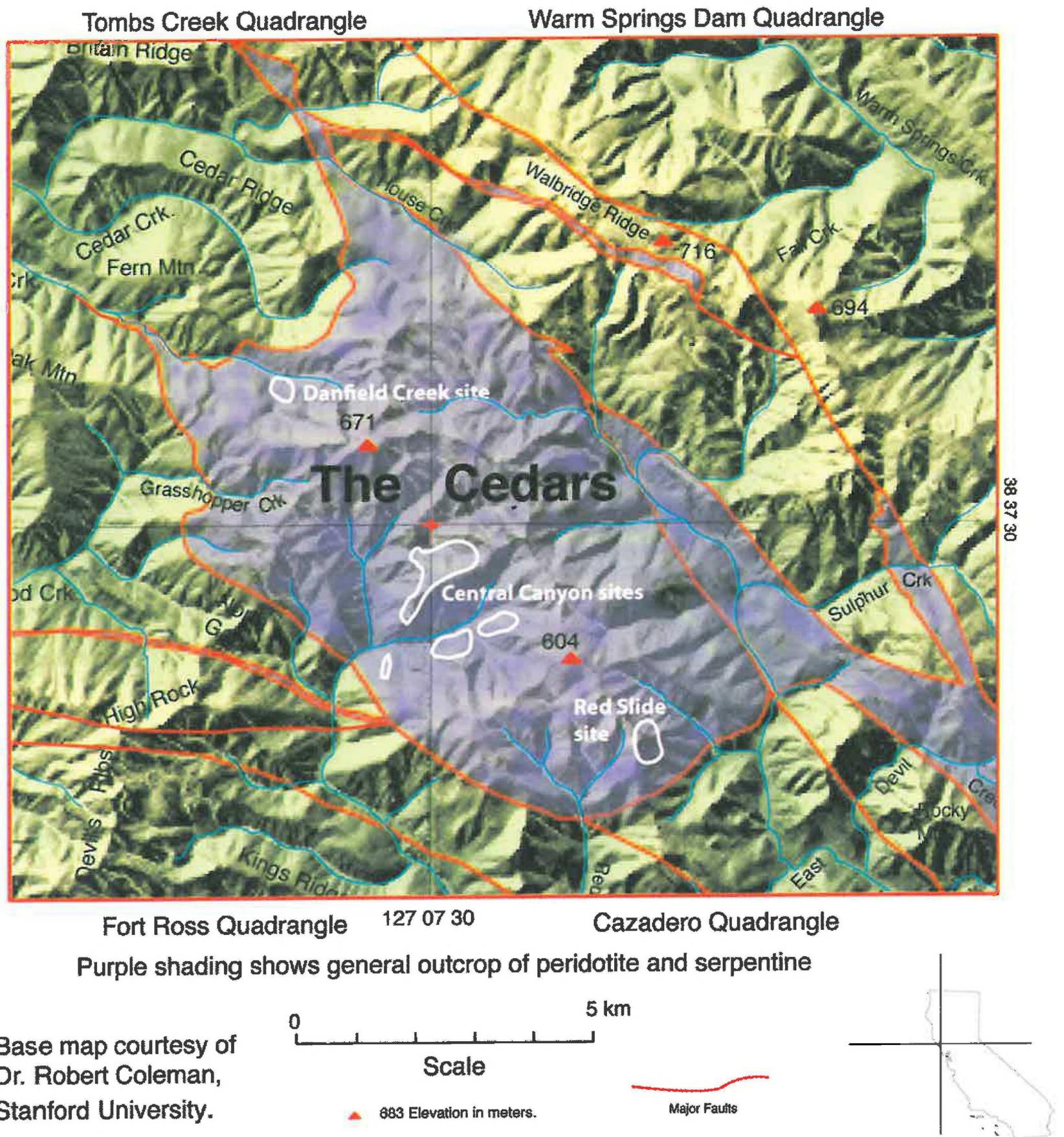


FIG. 3. Known distribution of *Eriogonum cedrorum* at The Cedars, Sonoma Co., California.

talus but a smaller number find bare rock crevices suitable; however, those on the talus are typically larger mats. There are roughly three zones where it occurs (Fig. 3); (1) the northwest part of The Cedars in upper Danfield Creek, (2) the central upper canyons of Big Austin Creek which contains the largest population, and (3) the east side near Red Slide above East Austin Creek which also harbors a large population. There seems to be no clear reason why this taxon is so restricted to these sites while not occurring nearby. While slopes with N-facing aspect account for the majority of the plants, some are on E-, S- and W-facing slopes.

There are ± 1500 to 2000 plants in existence. A recent survey of the Central Canyon sites shows the population to be extremely stable. While there were few small young plants, not a single dead mat was noted. A few plants had their crowns elevated >1.5 dm above the current rock surface, showing they had undergone that much erosion and survived. Erosion of the substrate is constant but not rapid. The lack of

any significant human disturbance at any site, the lack of senescence or death, and the persistence of plants in extremely harsh sites suggests this taxon is capable of great age.

Typical associates are these: *Asclepias solanoana* Woodson, *Aspidotis densa* (Brack.) Lellinger, *Cardamine californica* (Nutt.) Greene var. *sinuata* (Greene) O.E. Schulz, *Epilobium minutum* Lindl. ex Lehm., *Eriogonum luteolum* Greene, *E. nudum* Douglas ex Benth. var. *auriculatum* (Benth.) J.P. Tracy ex Jeps., *Hesperolinon spergulinum* (A. Gray) Small, *Minuartia douglasii* (Fenzl ex Torr. & A. Gray) Mattf., *Phacelia corymbosa* Jeps., *Sairocarpus vexillocalyculatus* (Kellogg) D.A. Sutton, *Streptanthus morrisonii*, and *S. barbiger* Greene. *Allium falcifolium* Hook. & Arn., *Eriophyllum lanatum* (Pursh) Forbes, and *Eschscholzia caespitosa* Benth. are more restricted to certain sites. The *Holodiscus* taxon mentioned above is the only hard-woody plant to occur within populations of *E. cedrorum*, but *Arctostaphylos bakeri* ssp. *sublaevis* and *A. viscida* Parry ssp. *pulchella* (Howell) P.V. Wells may occur peripherally.

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REFERENCE

- REVEAL, J.L. 2005. 44a. Polygonaceae Jussieu subfam. Eriogonoideae Arnott, Encycl. Britannica (ed. 7), 5:126. 1832
• Wild buckwheat subfamily. Fl. N. Amer. 5:218–478.